

U.S.S.N. 09/842,613

Filed: April 26, 2001

**AMENDMENT AND RESPONSE TO OFFICE ACTION**

**Remarks**

Amendment to the claims

Claims 1 and 11-26 are pending. Claims 15-17 and 22-24 have been amended to recite that the composition contains a copolymer having monomers capable of forming homopolymers having high minimum film-forming temperatures and monomers capable of forming homopolymers having low minimum film-forming temperatures. Claim 21 has been amended to recite a copolymer of between 60 and about 100 mole% 3-hydroxybutyrate and between about 0 and 40 mole% 3-hydroxyvalerate such that the defined polyester is consistent with the definition of a copolymer. Support is found at least in the original claims and at p. 7, line 10; and p. 7, line 25 to p. 8, line 9.

Double Patenting Rejection

Claims 1 and 11-26 were provisionally rejected under the statutory "same invention" type double patenting as being unpatentable over claims 1, and 11-26 of the copending application Serial No. 09/232,110. The present application is a continuation of U.S.S.N. 09/232,110, filed January 15, 1999, which is a continuation of U.S.S.N. 08/776,264 filed March 24, 1997, which is a 371 application of PCT application No. PCT/EP95/02821, filed July 14, 1995, which claims priority to UK application No. 9414922.6 filed July 25, 1994 in the United Kingdom.

Upon allowance of the present application, the applicant will cancel the corresponding claims 1 and 11-26 of the copending application Serial No. 09/232,110 if they are identical to any of the allowed claims of the present application or submit a terminal disclaimer.

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**Rejection Under 35 U.S.C. § 112, first paragraph**

Claims 1, and 11-26 were rejected under 35 U.S.C. § 112, first paragraph, for allegedly lacking enablement. Applicants respectfully traverse this rejection if it is applied to the claims as amended.

The Examiner asserted, essentially, that the composition claimed in claim 1 would not form a water-resistant film at ambient temperature. The formation of films in the instant examples of the specification is due to the presence of 10 wt% of a film-forming acrylic latex. The Examiner asserted that example 1 of US Patent No. 5,451,456 to Marchessault et al ("Marchessault") demonstrates that non-crystalline polyester forms a film with little or no strength at ambient temperature. The applicant respectfully disagrees.

The polyester used in Marchessault is distinct from the highly non-crystalline polyhydroxyalkanoate polyester in the claimed subject matter. As pointed out by Dr. Taylor in the Declaration submitted with the Amendment mailed June 23, 2000, the particles of Marchessault's latex formulations are moderately crystalline (p. 3, lines 2-3). Hence, Marchessault cannot be used to rebut Applicant's argument that the highly non-crystalline aqueous (co)polyester in the claimed subject matter alone would form a water-resistant film at ambient temperatures. The conclusion of the Examiner is therefore unwarranted.

The Examiner appeared to have based his position on his own understanding of the art that a non-crystalline or an amorphous PHA polyester alone is incapable of crystallizing and/or fusing at ambient temperatures to form a PHA polyester film. The applicant respectfully submits

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that this understanding of the film-forming ability of the non-crystalline or amorphous PHA is erroneous. In a further Declaration by Dr. Taylor submitted with this response, Dr. Taylor testifies that a non-crystalline or an amorphous PHA polyester alone will crystallize and/or fuse at ambient temperatures to form a PHA polyester film. The PHA film thus formed is water-resistant by the standard of the Water Spot test described at p. 11, line 36 to p. 12, line 5 of the present application.

Claims 15-17 and 22-24 were rejected under 35 U.S.C. § 112, first paragraph, as containing as allegedly containing new matter. Claims 15-17 and 22-24 have been amended to clarify that the composition defined therein contains a copolymer formed of monomers capable of forming homopolymers having high or minimum film-forming temperatures. The specification at p. 7, line 25 to p. 8, line 9 provides a full support for a composition containing a PHA as well as a copolymer defined as such.

Rejection Under 35 U.S.C. § 112, second paragraph

Claims 15-17 and 22-24 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Particularly, the examiner rejected the claims as allegedly not specifying particular temperatures and not defining the high and low minimum film forming temperatures in the specification. The Examiner further asserted that monomers do not form a film. Applicants respectfully traverse this rejection to the extent that it is applied to the claims as amended.

Claims 15-17 and 22-24 have been amended to correct the language objected to by the Examiner. With respect to the high and low film-forming temperatures recited in the claims, the

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applicant respectfully maintains that the terms are properly defined in the specification and clear to one of ordinary skill in the art. At p. 7, lines 34-36, the specification teaches that the preferred polymer useful in the claimed composition should have a minimum film-forming temperature of not more than 40 °C. The specification further teaches that the film-forming temperature of a copolymer can be controlled or selected by selecting monomers capable of forming homopolymers having a high minimum film-forming temperature and monomers capable of forming homopolymers having a low minimum film-forming temperature so as to generate a copolymer having a minimum film-forming temperature not more than 40 °C and preferably above 0 °C (p. 8, lines 2-9). Therefore, to one of ordinary skill in the art, the high minimum film-forming temperature would be preferably above 0 °C, whilst the low minimum film-forming temperature would be preferably lower than °C. Otherwise, it would be impossible to form a copolymer having a minimum film-forming temperature in the range preferably from 0 °C to 40 °C. Further explanation and examples are found at page 8, lines 2-36, and the references incorporated therein at lines 21-25 and 35. Note, claims need only "reasonably apprise those skilled in the art" as to their scope and need only be "as precise as the subject matter permits." Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1385 (Fed. Cir. 1986), *cert. denied* 480 U.S. 947 (1987). The law does not require a definition of the claim terms in the specification, as the Examiner suggests, when the meaning of those terms would be understood by those skilled in the art.

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Accordingly, applicant's claims are clear and definite, particularly when the claims as a whole are read in light of the specification.

**Rejection Under 35 U.S.C. § 103**

Claims 1 and 11-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent No. 5,451,456 to Marchessault et al ("Marchessault"). Applicants respectfully traverse this rejection to the extent that it is applied to the claims as amended.

*Marchessault*

Marchessault relates to a latex comprising a colloidal suspension in water of particles of a polymer or copolymer of hydroxyalkanoates; the latex may be employed to produce self-supporting films or prepare coated or impregnated paper or other fiber construct by heating at heating at 100 °C to 140 °C in order to form a film (col. 7, lines 29-32). Marchessault does not require at least 60 wt% of the PHA polymer or copolymer particles to have a density of less than 102% D<sub>min</sub>.

In contrast, the claimed subject matter requires "the composition forms a water-resistant film at ambient temperatures" and "at least 60% of the polyester particles have a density of less than 102% D<sub>min</sub>". As discussed above, density is correlated with crystallinity. Hence, by defining the density, one defines the crystallinity of the composition. The particles of the polyester at a density within the claimed range is highly non-crystalline, which is critical to the composition's film forming characteristic, as only highly non-crystallized particles of the polyester form films at ambient temperatures. The ability of the composition defined by any of

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claims 1 and 11-26 to form a water-resistant film at ambient temperature is further supported by the declaration by Dr. Taylor submitted with this response.

Therefore, the claimed density limitation distinguishes these polymers from those that do not form films at ambient temperatures. Marchessault does not teach either the density of the polyester particles, or forming a water-resistant film at ambient temperatures. Moreover, as pointed out by Dr. Taylor in the Declaration submitted with the Amendment mailed June 23, 2000, the particles of Marchessault's latex formulations are moderately crystalline (p. 3, lines 2-3). The prior art fails to teach or suggest each and every element of the claims.

Further, the prior art does not provide motivation for preparing a polyester having a density such that the polyester particles are highly non-crystalline, and thereby capable of forming a water-resistant film at ambient temperatures. The polyesters of Marchessault can form film at elevated temperatures (col. 7, lines 29-32), and Marchessault neither teaches nor suggests that the required elevated temperatures can be decreased by the addition of other latex polymers. The examiner alleged a room temperature film forming paint is a routine in the art. However, the prior art neither teaches nor suggests that the polymer in the paint can be changed to polyhydroxyalkanoate.

The prior art does not lead to a reasonable expectation of success of the claims. Indeed, the polyester of Marchessault forms a film with little or no strength at ambient temperature (example 1 of Marchessault). This is hardly surprising because, as discussed above, the Marchessault latex requires heating at 100 °C to 140 °C in order to form a film (col. 7, lines 29-

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32), and Marchessault does not specify that the at least 60 wt% of the polyester particles used therein should have a density of less than 102%  $D_{min}$ . As such, Marchessault cannot lead one of ordinary skill in the art to have a reasonable expectation of the claimed composition.

Claims 1 and 11-26 were further rejected under 35 U.S.C. § 103(a) as being unpatentable over Marchessault, in view of US Patent No. 4,016,306 to Miyagawa et al. ("Miyagawa"). Applicants respectfully traverse this rejection to the extent that it is applied to the claims as amended.

*Miyagawa*

Miyagawa teaches an aqueous film forming composition comprising an acrylic copolymer (col. 1, line 43 to col. 2, line 56).

The prior art fails to teach or suggest each and every element of the claims. Neither Marchessault nor Miyagawa teaches that at least 60 wt% of the PHA particles used in the composition should be at such a density of less than 102%  $D_{min}$ . Moreover, the prior art does not provide motivation for combining Marchessault and Miyagawa to make and use a composition capable of forming a film at ambient temperature. The polyester of Marchessault forming a film with little or no strength at ambient temperature (example 1 of Marchessault) would not lead to a reasonable expectation of success of the claimed method or composition.

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Allowance of claims 1, and 11-26 is respectfully solicited.

Respectfully submitted,



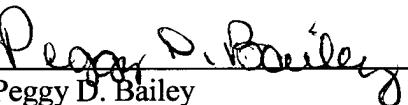
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Date: December 19, 2002

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**Certificate of Mailing Under 37 C.F.R. § 1.8(a)**

I hereby certify that this paper, along with any paper referred to as being attached or enclosed, is being deposited with the United States Postal Service on the date shown below with sufficient postage as first-class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.



Peggy D. Bailey

**AMENDMENT AND RESPONSE TO OFFICE ACTION**

**Marked Up Version of Amended Claims**

**Pursuant to 37 C.F.R. § 1.121(c)(1)(ii)**

1. (Amended) An aqueous, film-forming coating composition comprising a polyhydroxyalkanoate polyester, wherein the composition forms a water-resistant film at ambient temperatures and at least 60% of the polyester particles have a density of less than 102%  $D_{min}$ ,  $D_{min}$  being the lowest density attainable by the polyester.

11. The composition of claim 1 wherein the polyhydroxyalkanoate polyester forms particles which fuse at ambient temperatures.

12. The composition of claim 1 wherein the polyhydroxyalkanoate polyester comprises a copolymer of between 60 and 100 mole% 3-hydroxybutyrate and between 0 and 40 mole% 3-hydroxyvalerate.

13. The composition of claim 1 further comprising other film-forming polymers.

14. The composition of claim 13 wherein the film-forming polymers are obtained from monomers obtained from petroleum or vegetable oil feedstocks and which are present in an amount of up to 95 wt% of the combined weights of the film-forming polymer and the hydroxyalkanoate polyester.

15. (Twice amended) The composition of claim 1 further comprising a copolymer which comprises monomers capable of forming homopolymers [polyesters with] having high minimum film-forming temperatures and [polyesters with]monomers capable of forming homopolymers having low minimum film-forming temperatures.

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16. (Twice Amended) The composition of claim 15 wherein the monomers capable of forming homopolymers having high film-forming temperatures are [temperature polyesters comprise monomers] selected from the group consisting of carboxylic acids, non-acidic monomers, fumaric anhydrides, and maleic anhydrides.

17. (Twice amended) The composition of claim 15 wherein the monomers capable of forming homopolymers having low film-forming temperatures are [temperature polyesters comprise monomer] selected from the group consisting of ethyl acrylate, 2-ethyl acrylate, methyl acrylate, butyl acrylate, and vinyl esters of branched chain acids.

18. The composition of claim 1 further comprising a pigment.

19. A method of coating a structure comprising applying an aqueous film-forming coating composition comprising a polyhydroxyalkanoate polyester, wherein the composition forms a water-resistant film at ambient temperatures and at least 60% of the polyester particles have a density of less than 102%  $D_{min}$ ,  $D_{min}$  being the lowest density attainable by the polyester.

20. The method of claim 19 wherein the polyhydroxyalkanoate polyester forms particles which fuse at ambient temperatures.

21. The method of claim 19 wherein the polyhydroxyalkanoate polyester comprises a copolymer of between 60 and about 100 mole% 3-hydroxybutyrate and between about 0 and 40 mole% 3-hydroxyvalerate.

22. (Twice amended) The method of claim 19 wherein the coating composition further comprises [polyesters with] a copolymer which comprises monomers capable of forming

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homopolymers having high minimum film-forming temperatures and [polyesters with]  
monomers capable of forming homopolymers having low minimum film-forming temperatures.

23. (Twice amended) The method of claim 22 wherein the monomers capable of forming  
homopolymers having high film-forming temperatures are [temperature polyesters comprise  
monomers] selected from the group consisting of carboxylic acids, non-acidic monomers,  
fumaric anhydrides, and maleic anhydrides.

24. (Twice amended) The method of claim 22 wherein the monomers capable of forming  
homopolymers having low film-forming temperatures are [temperature polyesters comprise  
monomers] selected from the group consisting of ethyl acrylate, 2-ethyl acrylate, methyl  
acrylate, butyl acrylate, and vinyl esters of branched chain acids.

25. The method of claim 19 wherein the composition further comprises film-forming  
polymers comprising monomers obtained from petroleum or vegetable oil feedstocks and which  
are present in an amount of up to 95 wt% of the combined weights of the film-forming polymer  
and the hydroxyalkanoate polyester, and the composition is applied as a paint or varnish.

26. The method of claim 25 wherein the coating is applied to surfaces found on buildings  
or vehicles, their fittings or furnishings, or on metal or plastics containers

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**Clean Version of Amended Claims**

**Pursuant to 37 C.F.R. § 1.121(c)(1)(ii)**

1. (Amended) An aqueous, film-forming coating composition comprising a polyhydroxyalkanoate polyester, wherein the composition forms a water-resistant film at ambient temperatures and at least 60% of the polyester particles have a density of less than 102%  $D_{min}$ ,  $D_{min}$  being the lowest density attainable by the polyester.

11. The composition of claim 1 wherein the polyhydroxyalkanoate polyester forms particles which fuse at ambient temperatures.

12. The composition of claim 1 wherein the polyhydroxyalkanoate polyester comprises a copolymer of between 60 and 100 mole% 3-hydroxybutyrate and between 0 and 40 mole% 3-hydroxyvalerate.

13. The composition of claim 1 further comprising other film-forming polymers.

14. The composition of claim 13 wherein the film-forming polymers are obtained from monomers obtained from petroleum or vegetable oil feedstocks and which are present in an amount of up to 95 wt% of the combined weights of the film-forming polymer and the hydroxyalkanoate polyester.

15. (Twice amended) The composition of claim 1 further comprising a copolymer which comprises monomers capable of forming homopolymers having high minimum film-forming temperatures and monomers capable of forming homopolymers having low minimum film-forming temperatures.

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16. (Twice Amended) The composition of claim 15 wherein the monomers capable of forming homopolymers having high film-forming temperatures are selected from the group consisting of carboxylic acids, non-acidic monomers, fumaric anhydrides, and maleic anhydrides.

B1  
17. (Twice amended) The composition of claim 15 wherein the monomers capable of forming homopolymers having low film-forming temperatures are selected from the group consisting of ethyl acrylate, 2-ethyl acrylate, methyl acrylate, butyl acrylate, and vinyl esters of branched chain acids.

18. The composition of claim 1 further comprising a pigment.

19. A method of coating a structure comprising applying an aqueous film-forming coating composition comprising a polyhydroxyalkanoate polyester, wherein the composition forms a water-resistant film at ambient temperatures and at least 60% of the polyester particles have a density of less than 102%  $D_{min}$ ,  $D_{min}$  being the lowest density attainable by the polyester.

20. The method of claim 19 wherein the polyhydroxyalkanoate polyester forms particles which fuse at ambient temperatures.

21. The method of claim 19 wherein the polyhydroxyalkanoate polyester comprises a copolymer of between 60 and about 100 mole% 3-hydroxybutyrate and between about 0 and 40 mole% 3-hydroxyvalerate.

b2  
22. (Twice amended) The method of claim 19 wherein the coating composition further comprises a copolymer which comprises monomers capable of forming homopolymers having

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high minimum film-forming temperatures and monomers capable of forming homopolymers having low minimum film-forming temperatures.

23. (Twice amended) The method of claim 22 wherein the monomers capable of forming homopolymers having high film-forming temperatures are selected from the group consisting of carboxylic acids, non-acidic monomers, fumaric anhydrides, and maleic anhydrides.

b2  
24. (Twice amended) The method of claim 22 wherein the monomers capable of forming homopolymers having low film-forming temperatures are selected from the group consisting of ethyl acrylate, 2-ethyl acrylate, methyl acrylate, butyl acrylate, and vinyl esters of branched chain acids.

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25. The method of claim 19 wherein the composition further comprises film-forming polymers comprising monomers obtained from petroleum or vegetable oil feedstocks and which are present in an amount of up to 95 wt% of the combined weights of the film-forming polymer and the hydroxyalkanoate polyester, and the composition is applied as a paint or varnish.

26. The method of claim 25 wherein the coating is applied to surfaces found on buildings or vehicles, their fittings or furnishings, or on metal or plastics containers.

ATL1 #553626 v1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Philip Louis Taylor

Serial No.: 09/842,613 Group Art Unit: 1714

Filed: April 26, 2001 Examiner: T.H. Yoon

For: *AQUEOUS COATING COMPOSITION GIVING COATINGS HAVING AN IMPROVED EARLY HARDNESS AND TACK-RESISTANCE*

BOX DAC

Attention: Office of Petitions  
Assistant Commissioner for Patents  
Washington, D.C. 20231

**PETITION UNDER 37 C.F.R. 1.137(b) FOR REVIVAL OF AN APPLICATION FOR PATENT UNINTENTIONALLY ABANDONED**

Sir:

Applicants hereby petition for revival of the above identified application. This petition is being filed within one year of the abandonment of this application on December 21, 2001, and is accompanied by a check for \$640.00, the appropriate fee under 37 C.F.R. §1.17(m) for a small entity, a Declaration under 37 C.F.R. §1.132 by Dr. Taylor, and a response to the outstanding office action. The above-identified application became abandoned on December 21, 2001, for failure to file a response to the Office Action mailed on September 21, 2001. The Examiner requested information which was not available at the time the six month date to respond was due. That information is included in the Declaration under 37 C.F.R. §1.132 by Dr. Taylor and the Amendment being submitted with this Petition, in reply to the Office Action. The entire delay in filing the required reply, from the due date for reply of December 21, 2001, until the filing of a grantable petition pursuant to 37 CFR 1.137(h), of twelve months, was unintentional.

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**PETITION UNDER 37 C.F.R. 1.137(b) FOR REVIVAL OF AN  
APPLICATION FOR PATENT UNINTENTIONALLY ABANDONED**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.



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Zhaoyang Li  
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Date: December 19, 2002

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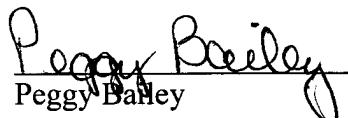
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**PETITION UNDER 37 C.F.R. 1.137(b) FOR REVIVAL OF AN  
APPLICATION FOR PATENT UNINTENTIONALLY ABANDONED**

**Certificate of Mailing Under 37 C.F.R. § 1.8(a)**

I hereby certify that this paper, along with any paper referred to as being attached or enclosed, is being deposited with the United States Postal Service on the date shown below with sufficient postage as first-class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

  
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Peggy Bailey

Date: December 19, 2002